

Best Management Practices

MISSOURI DEPARTMENT OF CONSERVATION



Indiana bat

Myotis sodalis

Common name • Indiana bat
Scientific name • *Myotis sodalis*
Federal status • Endangered
State status • Endangered

Ecology

Indiana bats use two types of habitat depending on season. Summer habitat consists of wooded or semi-wooded areas, often along streams. Solitary females or small clusters of females, called maternity colonies, bear their offspring in hollow trees or under loose bark of living or dead trees. Dead trees in either sunny openings or in the forest interior with a somewhat open canopy are selected over live trees. When available, live shagbark hickory (*Carya ovata*) and large white oaks (*Quercus alba*) are often the preferred tree species for maternal roost sites because of their loose bark. The white oaks should have a diameter at breast height of at least 9 inches; greater than 21 inches would be best. Indiana bats forage on insects in and around the tree canopy of flood plain, riparian and upland forest. Streams associated with flood plain forests and impounded bodies of water such as ponds, reservoirs and wetlands are preferred foraging habitats for pregnant and lactating bats.

During the winter, Indiana bats hibernate in cold trap caves or mines referred to as hibernacula. Bats have the ability to lower their metabolism during hibernation, thereby reducing the amount of energy and food they use. However, they enter hibernation with only enough fat reserves to last until spring. Any disturbance to bats while they are hibernating can arouse them and possibly result in their starvation if critical fat reserves are depleted.

Reasons for Decline

Indiana bat populations were first surveyed in the late 1950s. Since then, many hibernacula populations have decreased, especially in Missouri. A serious cause of the decline has been human disturbance while bats are hibernating. Even well-meaning recreational cavers and researchers may arouse the bats. Direct mortality due to human vandalism also has been documented. Some hibernacula are unavailable to bats because humans have built solid gates in the cave entrances that prevents entry of the bats and

of adequate air flow. Natural hazards, such as river flooding and below freezing temperatures, also have likely decreased Indiana bat populations.

Specific Recommendations

Although studies have shown that Indiana bats preferentially use forested areas along streams for maternity roosts during the summer, it is important to manage upland forested areas as well. In addition, protection of caves and karst habitat is essential to provide for bat winter roosting sites.

→ Retain large, dead trees with a diameter of more than 12 inches in forested areas along streams to provide maternal roost trees. Snag retention guidelines developed by the U.S. Forest Service at the Daniel Boone National Forest are adequate.

→ Retain live shagbark hickories for use by the bats.

→ Tree removal should occur between October 1 and March 31 to prevent disturbing bats during the maternity season.

→ Minimize access to areas known to contain roost sites to prevent bats from abandoning the roost trees.

→ Avoid access to hibernacula from September 1 through April 30.

→ Minimize road and trail construction, logging and urban development near hibernacula in the 100 foot buffer zone to avoid water runoff, siltation and adversely changing the climate of the cave.

General Recommendations

Refer to Management Recommendations for Construction Projects Affecting Missouri Karst Habitat and Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers.

Information Contacts

For a more detailed description of Indiana Bat habitat requirements and management, please refer to the Best Management Practices guide sheet written in 1998 by the Missouri Department of Conservation. For further information regarding guidelines for construction projects, please contact:

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Missouri Department of Natural Resources
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U.S. Army Corps of Engineers
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Kansas City, MO 64106-2896
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U.S. Environmental Protection Agency
Water, Wetlands, and Pesticides Division
901 North 5th Street
Kansas City, KS 66101
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U.S. Fish and Wildlife Service
Ecological Services Field Office
608 E. Cherry Street, Room 200
Columbia, MO 65201
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Disclaimer

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